EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael Fainberg #50,441 on 09/10/09.

The application has been amended as follows:

1. (Currently Amended) A method of ~~encoding~~ coding a view in a 2-dimensional CAD drawing into a format different from [a] the 2-dimensional CAD drawing, the method comprising:

a) filtering the 2-dimensional CAD drawing to temporarily remove extraneous material therefrom;

b) identifying a view in the 2-dimensional CAD drawing for coding;

c) identifying a feature of the view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

d) extracting properties of the feature from the 2-dimensional CAD drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the 2-dimensional CAD drawing;

e) generating code bits, wherein the code bits are representative of the extracted vector properties;

f) adding the generated code bits to a view code for the view, wherein the view code is ~~an encoded~~ a coded version of the view in a ~~different~~ format different from the 2-dimensional CAD drawing; and

g) storing the view code.

2. (Previously Presented) A method according to claim 1, further including repeating steps c) to g) for further entities and/or groups of entities in the view.

3. (Previously Presented) A method according to claim 1, wherein the group of graphic entities includes entities having similar properties, entities of a similar type or entities which form the group by virtue of their location or juxtaposition in the view.

4. (Currently Amended) A method according to claim 1, wherein the step of identifying a view in the 2-dimensional CAD for coding comprises defining a boundary enclosing an area which includes the graphic entities in the 2-dimensional CAD drawing and dividing the area to define a plurality of view areas, such that each view area includes one or more graphic entities, and no graphic entity is included in more than one area.

5. (Original) A method according to claim 4, wherein the boundary is a bounding rectangle, the step of dividing the boundary to define a plurality of view areas comprising splitting the bounding rectangle to define a plurality of view rectangles.

6. (Original) A method according to claim 4 further including the step of refining the views to be coded by removing all views having less than a predetermined number of entities and passing for coding views having greater than or equal to the predetermined number of entities.

7. (Currently Amended) A method according to claim 1, wherein the step of extracting the properties comprises identifying a type for each property from a predefined plurality of property types, each property type having associated items of property data, extracting the property data from the 2-dimensional CAD drawing and writing the type and associated property data items to a list.

8. (Original) A method according to claim 7, wherein the step of generating code bits includes setting type code bits corresponding to the property type and setting data code bits corresponding to each item of property data.

9. (Original) A method according to claim 8, wherein the setting of data code bits includes comparing each property data item with a predetermined sub-set of data associated with a given code bit and setting the given data code bit if the property data item falls within the predetermined sub-set.

10. (Original) A method according to claim 9, wherein each code bit has an associated attribute, a method for comparing the property data item with the predetermined sub-set of data associated with the code bit being determined by the attribute.

11. (Original) A method according to claim 10, wherein the attribute associated with the code bit is a predetermined attribute selected from a list of attributes which includes range, numeric and text, having respective associated comparison methods of:

"within range" wherein the code bit is set when the property data item has a value that falls within a predetermined range;

"greater than, less than, equal" wherein a different code bit is set according to whether the property data item has a value greater than, less than or equal to a predetermined value; and

"substring" wherein the code bit is set if there is exact correspondence with a predetermined text substring.

12. (Original) A method according to claim 1, wherein the view code has a predefined structure of code bits, and the drawing has a predetermined class, the code structure being defined differently for drawings having different classes.

13. (Original) A method according to claim 1, wherein the step of storing the view code includes encrypting the view code and storing the encrypted view code.

14. (Original) A method according to claim 13, wherein the step of storing comprises storing the encrypted view code in a catalogue, the catalogue being a portion of the database in which a sub-set of drawings is stored.

15. (Currently Amended) A method according to claim 13, wherein the step of storing includes storing encrypted view codes of all views in [[a]] the 2-dimensional CAD drawing.

16. (Currently Amended) A method according to claim 15, further including storing at least one of an image file of the 2-dimensional CAD drawing, details of a part or component depicted by the drawing, and other information relating to the drawing.

17. (Currently Amended) A method according to claim 1, wherein the step of filtering the 2-dimensional CAD drawing includes temporarily removing a frame/border of the drawing.

18. (Original) A method according to claim 17, wherein the frame/border is temporarily removed by identifying line entities which make up the frame/border,

identifying an inner boundary of the frame/border line entities, and temporarily deleting all graphic entities outside the inner boundary.

19. (Currently Amended) A method according to claim 17 or claim 18, wherein the filter process includes temporarily removing other entities including any one or more of: dimensions, machining marks, lines of prescribed type or name or ~~colour~~ color, drawing layers of prescribed name, text with prescribed ~~colour~~ color, and blocks.

20. (Currently Amended) A method of ~~encoding~~ coding a view from a vector-based 3-dimensional CAD model into a format different from [[a]] the vector-based 3-dimensional CAD model, the method comprising:

a) deriving a 2-dimensional view from the vector-based 3-dimensional CAD model for ~~encoding~~ coding;

b) identifying a feature of the view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

c) extracting properties of the feature from the vector-based 3-dimensional CAD model, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

d) generating code bits, wherein the code bits are representative of the extracted properties;

e) adding the code bits to a view code for the view, wherein the view code is ~~an encoded~~ a coded version of the view in a ~~different~~ format different from the vector-based 3-dimensional CAD model; and

f) storing the view code.

21. (Original) A method according to claim 20, further including repeating steps b) to e) for further entities and/or groups of entities in the view.

22. (Original) A method according to claim 20, including repeating steps a) to f) for further views from the 3-dimensional CAD model so as to store a plurality of codes of different views.

23. (Currently Amended) A method of ~~encoding~~ coding a view in a vector-based CAD drawing into a format different from [[a]] the vector-based CAD drawing, the method comprising:

a) identifying a feature of the view in the vector-based CAD drawing, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

b) extracting properties of the feature from the vector-based CAD drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

c) generating code bits, wherein the code bits are representative of the extracted properties;

d) adding the generated code bits to a view code for the view, wherein the code is a coded version of the view in a ~~different~~ format different from the vector-based CAD drawing; and

e) storing the view code.

24. (Original) A method according to claim 23, further including repeating steps a) to d) for further entities and/or groups of entities in the view.

25. (Previously Presented) A method according to claim 23, wherein the group of graphic entities includes entities having similar properties, entities of a similar type or entities which form a group by virtue of their location or juxtaposition in the view.

26. (Original) A method according to claim 23, wherein the step of extracting the properties comprises identifying a type for each property from a predefined plurality of property types, each property type having associated items of property data, extracting the property data from the CAD drawing and writing the type and associated property data items to a list.

27. (Original) A method according to claim 23, wherein the step of generating code bits includes setting type code bits corresponding to the property type and setting data code bits corresponding to each item of property data.

28. (Original) A method according to claim 27, wherein the setting of data code bits includes comparing each property data item with a predetermined sub-set of data associated with a given code bit and setting the given data code bit if the property data item falls within the predetermined sub-set.

29. (Original) A method according to claim 28, wherein each code bit has an associated attribute, a method for comparing the property data item with the predetermined sub-set of data associated with the code bit being determined by the attribute.

30. (Original) A method according to claim 29, wherein the attribute associated with the code bit is a predetermined attribute selected from a list of attributes which includes range, numeric and text, having respective associated comparison methods of:

"within range" wherein the code bit is set when the property data item has a value that falls within a predetermined range;

"greater than, less than, equal" wherein a different code bit is set according to whether the property data item has a value greater than, less than or equal to a predetermined value; and

"substring" wherein the code bit is set if there is exact correspondence with a predetermined text substring.

31. (Original) A method according to claim 23, wherein the view code has a predefined structure of code bits, and the drawing has a predetermined class, the code structure being defined differently for drawings having different classes.

32. (Original) A method according to claim 23, wherein the step of storing the view code includes encrypting the view code and storing the encrypted view code.

33. (Original) A method according to claim 32, wherein the step of storing comprises storing the encrypted view code in a catalogue, the catalogue being a portion of the database in which a sub-set of drawings is stored.

34. (Original) A method according to claim 32, wherein the step of storing includes storing encrypted view codes of all views in a drawing.

35. (Original) A method according to claim 34, further including storing at least one of an image file of the drawing, details of a part or component depicted by the drawing, and other information relating to the drawing.

36. (Original) A method according to claim 23 including, prior to extracting the vector properties, a filter process for temporarily removing extraneous material from the drawing.

37. (Original) A method according to claim 36, wherein the filter process includes temporarily removing a frame/border of the drawing.

38. (Original) A method according to claim 37, wherein the frame/border is temporarily removed by identifying line entities which make up the frame/border, identifying an inner boundary of the frame/border line entities, and temporarily deleting all graphic entities outside the inner boundary.

39. (Previously Presented) A method according to claim 37, wherein the filter process includes temporarily removing other entities including any one or more of: dimensions, machining marks, lines of prescribed type or name or color, drawing layers of prescribed name, text with prescribed color, and blocks.

40. (Currently Amended) A method of selecting a CAD drawing for retrieval from a database of drawings, the method comprising:

a) producing a CAD source drawing comprising a source view;

b) identifying a feature of the source view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

c) extracting properties of the feature from the CAD source drawing, wherein the properties include vector properties associated with the graphic entity or group of graphic entities and are derived from coordinates relating to the feature's position within the drawing;

d) generating code bits, wherein the code bits are representative of the extracted properties;

e) adding the code bits to a source view code for the source view, wherein the source view code is ~~an encoded~~ a coded version of the source view in a different format from the source view;

f) comparing the source view code with each of a plurality of stored view codes and calculating a similarity index for each stored view code of the plurality; and

g) selecting the drawing for retrieval from the database on the basis of the similarity index.

41. (Original) A method according to claim 40, wherein the step of selecting comprises identifying a most similar view of the plurality of views, the most similar view having the highest similarity index, and selecting the drawing which contains the most similar view.

42. (Original) A method according to claim 40, wherein the step of selecting includes the step of displaying a list of drawings for user selection of the drawing, the list being ordered according to the similarity indices of views in the drawings.

43. (Original) A method according to claim 40, wherein the plurality of stored view codes comprises the view codes of views contained in drawings stored in a catalogue, the catalogue being a portion of the database.

44-46. (Canceled)

47. (Currently Amended) A method for determining data ranges of a vector property of a graphic entity in a set of drawings, the method comprising:

a) determining a sample of views from said set of drawings;

b) selecting a view from said sample of views;

c) identifying said graphic entity in said view in the form of a line or curve;

d) extracting said vector property of said graphic entity in said selected view wherein the property is derived from coordinates relating to the feature's position within the drawing;

e) repeating steps b) to d) for the other views in the sample of views;

f) determining a minimum and a maximum value of said extracted vector properties; and

g) assigning data ranges to said vector properties on the basis of said maximum and minimum values.

48. (Original) A method according to claim 47 wherein the data ranges are assigned to achieve an even distribution of the population of vector property values in each range.

49. (Currently Amended) A method of producing a model code directly from a 3-dimensional CAD model in a format different from [[a]] the 3-dimensional CAD model, the method comprising:

a) identifying a feature in the 3-dimensional CAD model comprising a geometrical entity or a group of geometrical entities;

b) extracting properties of the feature from the CAD model, wherein the properties include vector properties associated with the geometrical entity or group of geometrical entities, the vector properties derived from coordinates relating to the feature's position within the model;

c) generating code bits, wherein the code bits are representative of the extracted properties;

d) adding the generated code bits to a model code for the model; and

e) storing the model code.

50. (Previously Presented) A method according to claim 1 wherein the line or curve comprises a straight line, arc or circle.

51. (Previously Presented) A method according to claim 1 wherein the vector properties include coordinate data for specifying the location of a feature.

52. (Previously Presented) A method according to claim 1 wherein the vector properties include coordinate data defining the geometry of a feature, such as line length, orientation, radius.

53. (Currently Amended) A drawing retrieval system for a 2-dimensional CAD system comprising an input device and a display, and a memory for storing data including a database of drawings, the drawing retrieval system comprising:

a) an identifier configured to identify a feature of a view in a 2-dimensional CAD drawings, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve;

b) an extractor configured to extract properties of the feature, wherein the properties include vector properties associated with the entity or group of entities and are derived from coordinates relating to the feature's position within the drawing;

c) ~~an encoder~~ a coder configured to generate code bits and to add the code bits to a view code for the view, wherein the code bits are representative of the extracted properties;

d) the system configured to store the view code in the memory;

e) the system configured to compare (i) a first view code of a first view in a first drawing entered in the input device with (ii) a second view code of a second view a

second drawing in the database, to derive a similarity index indicative of a degree of similarity between the first view and the second view; and

f) the system configured to present ~~presenting~~ on the display, on the basis of the similarity index, a list of drawings from which a user can select for retrieval from the database means for retrieving a selected drawing from the database.

54. (Currently Amended) A computer readable medium encoded with software comprising computer readable instructions for controlling a computer to code a view in a CAD drawing, including instructions for coding a view in a 2-Dimensional CAD drawings into a format different from [[a]] the 2-Dimensional CAD drawing by:

a) filtering said 2-dimensional CAD drawing to temporarily remove extraneous material therefrom;

b) identifying a view within the 2-Dimemensional CAD drawing for ~~encoding~~ coding;

c) identifying a feature of the identified view, wherein the feature comprises a graphic entity or a group of graphic entities in the form of a line or curve,

d) extracting properties of the feature from the ~~vector based~~ 2-Dimensional CAD drawing, wherein the properties are vector properties associated with the graphic entity or group of graphic entities and derived from coordinates relating to the feature's position within the drawing;

e) generating code bits, wherein the code bits are representative of the extracted vector properties;

f) adding the generated code bits to a view code for the view, wherein the view code is ~~an encoding~~ a coded version of the view in a ~~different~~ format different from the 2-Dimensional CAD drawing; and

g) storing the view code.

55. (Currently Amended) A computer readable medium encoded with software comprising computer readable instructions for controlling a computer to facilitate selection by a user of a CAD drawing for retrieval from a database of CAD drawings, each CAD drawing in the database comprising at least one view that has been ~~encoded~~ coded by:

a) identifying a view within the ~~2-Dimemensional~~ CAD drawing for ~~encoding~~ coding;

b) identifying a feature of the identified view, wherein the feature comprises a graphic entity or a group of graphic entitles in the form of a line or curve;

c) extracting properties of the feature from the ~~vector-based 2-Dimensional~~ CAD drawing, wherein the properties are vector properties associated with the graphic entity or group of graphic entities and derived from co-ordinates relating to the feature's position within the drawing;

d) generating code bits, wherein the code bits are representative of the extracted vector properties;

e) adding the generated code bits to a view code for the view; wherein the view code is ~~an encoded~~ a coded version of the view in a ~~different~~ format different from the CAD drawing,

wherein the computer readable instructions include instructions for:

i) producing a CAD source drawing comprising a source view;

ii) coding the source view in accordance with steps a) to e) above;

iii) comparing the source view code with each of a plurality of stored codes of views in the database of drawings to calculate a similarity index for each stored view code; and

iv) on the basis of the similarity index, presenting a list of drawings from which the user can select for retrieval from the database.

Response to Arguments

Applicant's arguments, see the appeal brief, filed 07/06/09, with respect to the claims have been fully considered and are persuasive. The rejection of the pending claims has been withdrawn.

Allowable Subject Matter

Claims 1-43, and 47-55 are allowed.

The following is an examiner's statement of reasons for allowance: the claims are allowable due to the persuasive arguments of the Applicant.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOHN B. STREGE whose telephone number is (571)272-7457. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/John Strege/
Primary Examiner
09/15/09